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CORRIGENDUM NOTICE

eNIT Reference No.:- FSID/QuRP/20/25-26

KPPP Tender Reference No. – FSID/2025-26/IND0010

Description – Procurement of Cryogen Free Dilution Refrigerator

Please find below revised technical specifications (Refer – Section VI of NIT)

A. General Requirements

Parameter	Requirement
Base Temperature	≤ 10 mK (preferably ≤ 8 mK)
Cooling Power	≥ 400 µW @ 100 mK
Cooldown Time to base temp	≤ 36hours (PTC-optimized)
Warm-up Time	≤16 hours (with heaters)
Vibration at MC Plate	≤ 100 nm amplitude (horizontal/vertical) at 100 Hz
Sample Space	≥ 210 mm diameter at MC plate, ≥ 210 mm vertical clearance
Magnetic Field (Optional)	6-1-1 vector magnet

Refrigeration & Isolation

Pulse Tube Cryocooler (PTC)	Sumitomo/Cryomech or equivalent
Vibration Isolation	Mechanical and electrical isolation of PTC/compressor from cryostat
Cold Trap	Must allow >6 months of continuous operation without blockages

B. Optical, Electrical & RF Wiring

Optical Fibers

Path	Specification
RT → MC chamber	4x multimode polarization-maintaining fibers 2x with mid-IR transmission window preferred

Coaxial Cables

Path	Specification
RT → 4K Plate	12 × 2.19 mm CuNi (50 Ω, SMA-M, ≤18 GHz resonance-free) **TWO of these must support up to 40 GHz (Appropriate connector must be provided)**
4K → Mixing Chamber	8 × 0.86 mm CuNi (50 Ω, SMA-M, ≤18 GHz resonance-free) **TWO of these must support up to 40 GHz(Appropriate connector must be provided)**
MC → 4K	4 × 2.19 mm NbTi (for microwave components)

DC Wiring

	Specification
RT → 4K Plate	2 × twisted-pair copper looms (24 wires total, 100 µm diameter)
4K → Mixing Chamber	2 × twisted-pair CuNi/NbTi looms (24 wires total, 100 µm diameter)
Thermal anchoring	At each stage

C. Gas Handling & Pumping

Pumping system	Dry Pumping System: Turbo molecular pump + oil-free backing pump
Gas Handling Unit	Pressure gauges, overpressure valves, emergency dump system
Compressor	Electrically isolated, compatible with $^3He/^4He$ mixture

D. Control & Software

Automation	Fully automated cooldown/warm-up with safety interlocks
Software	Windows compatible, remote monitoring, free upgrades for 5 years

E. Optional Accessories

Item	Specification
Fast sample exchange	
UPS Backup	2-hour runtime for full system
Water Chiller	≥10 L/min, ΔT ≤5°C, low-vibration
Air Compressor	Oil-free, ≥8 bar, <60 dB
Future-Proofing	4x blank ports reserved for future experimental access.

Delivery & Installation

Installation	Vendor to provide onsite assembly, testing, and training
Documentation	Soft/hard copies of manuals, wiring diagrams, and safety protocols

Testing	Validate vibration, RF performance, and cooling metrics during commissioning

Warranty & Support

Warranty	3 years comprehensive (including PTC, pumps, electronics) + 2 year AMC with essential spares
Service Plan	Local distributor support for minor issues; parent company for major repairs
Field-Replaceable Parts	List to be provided

Submission Requirements

Bidders must submit:

1. Technical Compliance Sheet (confirming adherence to all specs).

2. Company Profile (experience with similar systems).

3. Test Reports (vibration/RF performance from past installations).

4. Give list of 5 installations of cryogen free dilution fridges in India in the last 5 year

1. Technical Specifications (B):

A. General Requirements

Parameter	Requirement
Base Temperature	≤ 15 mK
Cooling Power	≥ 250 μW @ 100 mK
Cooldown Time	≤ 36 hours (PTC-optimized)
Warm-up Time	≤ 16 hours (with heaters)
Vibration at MC Plate	≤ 100 nm amplitude (horizontal/vertical) at 100 Hz
Sample Space	≥ 150 mm diameter at MC plate
Magnetic Field (optional)	8 T SC magnet

Refrigeration & Isolation

Pulse Tube Cryocooler (PTC)	Sumitomo/Cryomech or equivalent
Vibration Isolation	Mechanical and electrical isolation of PTC/compressor from cryostat
Cold Trap	Must allow >6 months of continuous operation without blockages

B. Electrical & RF Wiring

Optical Fibers

Path	Specification
RT → MC chamber	4x multimode polarization-maintaining fibers 2x with mid-IR transmission window preferred

Coaxial Cables

Path	Specification
RT → 4K Plate	8 × 2.19 mm CuNi (50 Ω, SMA-M, ≤18 GHz resonance-free) **TWO of these must support up to 40 GHz(Appropriate connector must be provided)**
4K → Mixing Chamber	6 × 0.86 mm CuNi (50 Ω, SMA-M, ≤18 GHz resonance-free) **TWO of these must support up to 40 GHz(Appropriate connector must be provided)**
MC → 4K	2 × 2.19 mm NbTi (for microwave components)

DC Wiring

	Specification
RT → 4K Plate	2 × twisted-pair copper looms (24 wires total, 100 µm diameter)
4K → Mixing Chamber	2 × twisted-pair CuNi/NbTi looms (24 wires total, 100 µm diameter)
Thermal anchoring	At each stage

C. Gas Handling & Pumping

Pumping system	Dry Pumping System: Turbo molecular pump + oil-free backing pump
Gas Handling Unit	Pressure gauges, overpressure valves, emergency dump system
Compressor	Electrically isolated, compatible with $^3He/^4He$ mixture

D. Control & Software

Automation	Fully automated cooldown/warm-up with safety interlocks
Software	Windows compatible, remote monitoring, free upgrades for 5 years

E. Optional Accessories

Item	Specification
Fast sample exchange	Bottom-loading design for easy sample insertion
UPS Backup	2-hour runtime for full system
Water Chiller	≥10 L/min, ΔT ≤5°C, low-vibration
Air Compressor	Oil-free, ≥8 bar, <60 dB
Future-Proofing	4x blank ports reserved for future experimental access.

2. Delivery & Installation

Installation	Vendor to provide onsite assembly, testing, and training
Documentation	Soft/hard copies of manuals, wiring diagrams, and safety protocols
Testing	Validate vibration, RF performance, and cooling metrics during commissioning

3. Warranty & Support

Warranty	3 years comprehensive (including PTC, pumps, electronics) + 2 year AMC with essential spares
Service Plan	Local distributor support for minor issues; parent company for major repairs
Field-Replaceable Parts	List to be provided

4. Submission Requirements

Bidders must submit:

1. Technical Compliance Sheet (confirming adherence to all specs).

2. Company Profile (experience with similar systems).

3. Test Reports (vibration/RF performance from past installations).

4. Give list of 5 installations of cryogen free dilution fridges in India in the last 5 year

A. This tender invites qualified suppliers to submit proposals for the supply, installation, and commissioning of dilution refrigerator systems. Two alternative technical specifications ("Specification A" and "Specification B") are provided. Bidders may submit proposals for one specification, the other, or both.

B. The contracting authority reserves the full right to:

- Award the contract based on **Specification A**,
- Award the contract based on **Specification B**, or
- **Award the contract by combining one from each** specifications

C. **Compliance and Documentation**

Technical documentation must demonstrate compliance with the relevant specification(s) using a

Any deviations must be explicitly stated with supporting rationale and alternative solutions.

All other terms and conditions of the tender remains unchanged.

Head Commercial
Foundation for Science Innovation and Development